DOCUMENT RESUME

ED 284 569 IR 052 035

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TITLE	Survey on National Standards on Paper and Ink to Be Used by the Administration for Records Creation: A RAMP Study with Guidelines.
INSTITUTION	United Nations Educational, Scientific and Cultural Organization, Paris (France). General Information Programme.
REPORT NO	PGI-86/WS/22
PUB DATE	87
NOTE	58p.
AVAILABLE FROM	Division of the General Information Programme, Documentation Centre, UNESCO, 7 Place de Fontenoy, 75700 Paris, France (free).
PUB TYPE	Legal/Legislative/Regulatory Materials (090) -- Reports - Research/Technical (143)
EDRS PRICE	MF01 Plus Postage. PC Not Available from EDRS.
DESCRIPTORS	*Archives; Developed Nations; Developing Nations; Foreign Countries; *International Cooperation; International Organizations; *Paper (Material); *Standards; Surveys
IDENTIFIERS	*Inks; International Council on Archives; *Records Management

ABSTRACT

Undertaken as the result of an International Council on Archives (ICA) recommendation to collect, disseminate, and keep updated a corpus of national standards relevant to records and archives management, this report is based on a survey for a proposed RAMP (Records and Archives Management Programme) study on national standards, the British Standards Institution library's collection of standards, and a questionnaire submitted to all national archives or equivalent institutions in ICA member countries. Following a brief introduction, standards for permanent paper are detailed and a listing of standards is provided for non-archival papers, printing papers, writing papers, papers for typewriters and duplicators, and paper for electrostatic copiers. A summary is also provided of standards for inks for writing, inks for use in fountain pens or dip pens, inks for ballpoint pens and marking pens, typewriter ribbons, stamp pad inks, ink for printing, ink for duplicators, and photocopier images. In addition, a directory of standards by country is provided, including addresses from which copies of standards may be obtained. Survey results indicate that, in general, archives and archival institutions are not major producers of standards. An 11-item bibliography and a listing of 55 RAMP publications and related documents are also provided. (KM)

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Survey on national standards on paper and ink to be used by the administration for records creation: a RAMP study with guidelines

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IR 053035

General Information Programme and UNISIST

United Nations Educational,
Scientific and Cultural Organization

Paris, 1987

Original : English PGI-86/WS/22

SURVEY ON NATIONAL STANDARDS ON PAPER AND INK TO BE USED BY THE ADMINISTRATION FOR RECORDS CREATION

A RAMP STUDY WITH GUIDELINES

prepared by

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Recommended catalogue entry :

THOMAS, D.L.- Survey on national standards on paper and ink to be used by the administration for records creation : a RAMP study with guidelines / prepared by D.L. Thomas /for the / General Information Programme and UNISIST. - Paris : Unesco, 1986. - 47 p.; 30 cm. - (PGI-86/WS/22)

I - Title

II - Unesco General Information Programme and UNISIST

III - Records and Archives Management Programme (RAMP)

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PREFACE

In order to assist in meeting the needs of Member States, particularly developing countries, in the specialized areas of archives administration and records management, the Division of the General Information Programme has developed a long-term Records and Archives Management Programme - RAMP

The basic elements of RAMP reflect and contribute to the overall themes of the General Information Programme. RAMP thus includes projects, studies and other activities intended to :

- develop standards, rules, methods and other normative tools for the processing and transfer of specialized information and the creation of compatible information systems;

- enable developing countries to set up their own data bases and to have access to those now in existence throughout the world, so as to increase the exchange and flow of information through the application of modern technologies;

- promote the development of specialized regional information networks;

- contribute to the harmonious development of compatible international information services and systems;

- set up national information systems and improve the various components of these systems;

- formulate development policies and plans in this field;

- train information specialists and users and develop the national and regional potential for education and training in the information sciences, library science and archives administration.

The present publication is a follow-up of a survey which was carried out on "National Standards on Paper and Ink to be used by the Administration for Records Creation".

After giving a list and summaries of standards for paper and those for ink, the author includes a Directory of Standards by country, and indicates those countries which have not been identified as having relevant standards and those for which the survey could not give information.

It is hoped that, with the addresses provided, from which copy may be obtained, and the cross references given by the author, those standards will be very useful to archives and archival institutions which are not major producers of such standards.

Comments and suggestions regarding this study are welcomed and should be addressed to the Division of the General Information Programme, UNESCO, 7 Place de Fontenoy, 75007 Paris. Other studies prepared under the RAMP programme may also be obtained at the same address.

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1. INTRODUCTION

1.1 This survey is the result of an expert consultation convened by the International Council on Archives on behalf of Unesco, at Bari, Italy in 1979 which recommended the collection, dissemination and keeping up-to-date of a corpus of national standards relevant to records and archives management.

1.2 The report is based on three sources :

1. The returns to Michael Roper's survey for his proposed RAMP study : Directory of national standards relating to archives administration and records management.

2. The collection of standards held in the library of the British Standards Institution, Linford Wood, Milton Keynes, Bucks, United Kingdom.

3. A questionnaire submitted to all national archives or equivalent institutions in member countries of ICA.

1.3 The report is arranged in six sections : summary of standards for paper (section 2); summary of standards for inks (section 3); directory (section 4); conclusion (section 5) and bibliography, giving references to published works other than standards (section 6).

1.4 Section 2 lists and details all standards for permanent paper and lists other standards for paper. It omits those standards which specify paper sizes or which describe methods of testing paper, as there are existing ISO standards on these subjects. Slightly less relevant standards, such as those for drawing papers, carbon paper or for designs of forms, letterheads etc. have not been included.

1.5 Section 3 summarizes standards for inks used in fountain or dip pens, ball point or fibre tipped pens, typewriter ribbons, stamp pads, and for printing and duplicating, as well as one solitary standard for the image of photocopiers.

1.6 Section 4 lists all standards by country, as well as indicating those countries which have not been identified as having relevant standards and those for which no information is available. Addresses are provided from which copies may be obtained. Cross references are provided to those standards which are summarized elsewhere in the report.

1.7 Standards are produced in very many languages in considerable technical detail and for this reason, it has not proved possible to provide summaries of all of them. Although every effort has been made to produce accurate summaries, there is not sufficient space to provide full technical details and it is important that anyone wishing to make use of any standard described in this list should consult the original.

2 STANDARDS FOR PAPER

2.1 INTRODUCTION

2.1.1 This section is divided into two parts, the first gives details of standards for permanent papers, the second lists other national standards for paper. Methods of testing paper and detailed specifications for paper dimensions have not been listed because they are covered by ISO standards.(1)

2.1.2 Research has been conducted into the reasons for the decay of paper and into methods of producing permanent material since 1829 when John Murray used tincture of litmus to identify sound, stable paper. Work has continued ever since; the most important contributions being made by S.Kohler and G.Hall of the Swedish Government Testing Bureau in the 1920s and the American, W.J.Barrow in the 1950s.(2)

The result of this work has been to identify the acidity or alkalinity of paper as the main factor behind its survival. Paper which is neutral or slightly alkaline tends to survive much longer than that which is acidic. Closely associated with this is the purity of the stock; fifty years ago, the general opinion was that it was impossible to make permanent paper from wood pulp and that all rag stock was essential, modern opinion is that although the impurities associated with mechanical woodpulp (notably lignin) are unacceptable, it is perfectly possible to produce permanent paper using chemical pulp.(3)

2.1.3 There are disappointingly few standards for archival papers; only seven countries appear to have produced them.
The standards are all similar and are based on the research outlined above. They are all concerned with the stock from which the paper is made and insist on the use of a pulp which is free from groundwood and unbleached fibres. Those from Denmark, India and Pakistan attempt to secure higher quality raw materials by specifying the proprotion of alpha cellulose or the copper number. The Indian and Pakistani standards only permit the use of cotton or linen rags and specify the maximum permitted ash and

rosin content.

Most standards specify a minimum pH of between 6.5 and 7.5; the exceptions to this are those from India and Canada which permit a higher level of acidity. The need to provide protection against acidity arising from ageing of the paper or from atmospheric pollution is met in the Finnish and American standards by specifying the use of a carbonate filler which would neutralize such acid.

Acidity or alkalinity, the type of stock used and the presence of carbonate fillers are factors which affect the permanence of the paper; that is to say, its ability to maintain its initial properties over a long period of time. Most standards are also concerned with durability : the ability of a paper to resist the effects of wear and tear in use. Permanence and durability are not always found together; bank note paper, for example, has to be very durable, but not necessarily permanent.

Precise comparisons of specifications for durability between standards is not really possible for two reasons; firstly, there are a wide range of testing methods which do not produce comparable results; secondly, the standards themselves use very different units of measurement. For this reason, it has been decided to omit details of these specifications from this report.

One measure of durability which is specified in most standards is folding endurance : the number of double folds required to cause a rupture in a narrow strip of paper subjected to a standard longitudinal stress. This can either be expressed as a number of double folds or as the logarithm to the base 10 of the number of folds. The 1981 American standard for bond and ledger paper (ASTM D 3290-81) reported that recent research had cast doubt on the validity of folding endurance as a measure of the durability of paper; some published work does confirm that folding endurance is not a reliable measure of permanence.(4) Folding endurance is, however, specified in a 1984 American standard (ANSI Z39.48-1984).

The other major measure of durability used in these standards is its internal tearing resistance : the mean force required to continue the tearing of an initial cut in a single sheet of paper. This is either expressed as a measure of the force required to tear one sheet of paper, or as a factor : the force required divided by the grammage of the paper; this provides a measure of the tearing resistance of the paper fibres.

The Indian and Pakistani standards specify the burst factor : the

pressure required to rupture a standard sample of the paper divided by its basis weight. The Swedish standard specifies the tensile strength of paper expressed as its tear tolerance length : the length of a strip of material whose weight is equivalent to the force that would break it.

Standards produced in Canada, Denmark, Finland, India, Pakistan and one American standard (ASTM D 3458-75) specify that paper should retain a high proportion of its physical properties after accelerated ageing; normally for 72 hours at 105° C. The possible value of accelerated ageing was assessed by Wilson and Parks who were able to re-examine papers which had been subject to ageing tests in 1937. They reported that when the results of accelerated ageing were compared with 36 years' natural ageing, there was a good correlation between changes in alpha cellulose and copper number, while pH was a reasonably good criterion of stability. Correlations between retention of folding endurance and internal tear resistance were not high.(5)

Most standards contain provisions relating to the suitability of the paper for its intended use. These include fluorescence, opacity, brightness and air, water and pick resistance.

2.1.4 Of those standards which have been examined, the most recent one is the American National Standard - Permanence of Paper for Printed Library Materials (ANSI Z39.48-1984). This contains factors which are common to most other standards : a minimum pH of 7.5, the use of stock which does not include groundwood and the incorporation of an alkaline reserve. It specifies a minimum folding endurance and tear resistance. It does not include any reference to the use of accelerated ageing, nor does it specify characteristics which are related to the intended use of the paper, rather than its permanence or durabilty. The standard is simple and up-to-date and would form a suitable basis for an international standard for permanent library and archival papers. It does, however, have one drawback : it is a US publication and thus specifies US rather than ISO test methods and uses a mixture of metric and imperial units (paper size and weight is specified in inches and pounds).

2.2 STANDARDS FOR PERMANENT PAPER

2.2.1 Canada : 9 GP-41-M 1979, Paper, ledger
Standard for permanent, semi-permanent and other ledger paper for use in printing, typewriting and pen and ink writing. Has detailed specifications for permanent and durable paper.
Covers curl, surface condition, stock (free from unbleached and

ground wood pulps), writing quality and erasing quality.
Specifies : pH 4.8 minimum,
grammage,
thickness,
printing opacity,
internal tearing resistance,
folding endurance,
folding endurance after accelerated ageing for 72 hours at 100°C,
air resistance,
water resistance,
pick resistance.

2.2.2 Denmark : The national archives has issued guidelines for the use of paper by state institutions which specify that archive paper should be used where the interests of the state, the obligations of the town or parish, or the historical nature of the material makes the use of hard wearing and long lasting material essential. The State Purchasing Office issued instructions in 1983 concerning permanent paper. Two weights of paper are to be used : 115 gsm for maps, plans, land registers, parish registers, registers of mortgages, case records, journals and ledgers; and 80 gsm for minutes, evidence of official obligation and commitment, birth and other certificates.
Specifies : copper number : 0.3,
folding endurance,
folding endurance after accelerated ageing for 72 hours at 100°C,
tear resistance,
pH value 7.5.

2.2.3 Finland : SFS 4465 1980, Uncoated papers and boards for archival storage. A modified version of this was issued as State Administrative Standard VHS 1009 in 1983. The use of permanent materials for records intended for retention was made compulsory by the Archives Law (184/81) and by section 10 of the Archives Decree (1012/82). The Technical Research Centre produces annual lists of materials which conform to the standard.
The standard is for both archival and semi-permanent paper and boards. Specifies : mass,
fibre composition,
carbonate filling,
water absorption,
pH 7.5 for type A,
6.5 for type B,
5.5 for type C,
folding endurance,
tear resistance,

brightness,
opacity,
accelerated ageing : after 72 hours at 105 C the pH of type A to be 7, that of type B to be 6 and that of type C to be 5. Specifications are also given for folding endurance and brightness after accelerated ageing.

2.2.4 India : IS 1774 1961, Paper for permanent records
Covers suitability for writing.
Specifies : substance,
fibre composition (100% cotton or linen or a mixture of both),
alpha cellulose content (85% minimum),
copper number : 2 maximum,
ash content : 2% maximum,
rosin : 1.5% maximum,
pH 5.5 minimum,
burst factor,
folding endurance,
accelerated ageing : after 72 hours at 103°C, the paper shall retain at least 98% of its original alpha cellulose content, the copper number shall not increase by more than 0.5 and it shall retain at least 50% of its original folding endurance.

2.2.5 Pakistan : PS 776 1970, Paper for permanent records
Covers quality of manufacture.
Specifies : Fibre composition (100% cotton or linen or a mixture of both),
alpha cellulose content : 85% minimum,
copper number : 2 maximum,
ash content : 2% maximum,
rosin content : 1.5% maximum,
pH 6.5-8,
burst factor,
folding endurance,
accelerated ageing : after 72 hours at 103°C, the paper shall retain at least 98% of its original alpha cellulose content, its copper number shall not increase by more than 0.5 and it shall retain at least 50% of its original folding endurance.

2.2.6 Sweden : The relevant standards are included in the Ordinance concerning the use of writing material for state business (1964 : 504). This specifies the types of paper that are to be used by official bodies for records which are to be preserved. The original purpose of the Swedish rules was to prevent wood pulp paper being used for archival materials. An

annual list of materials approved for archival use is issued by the Swedish Authority for Testing, Inspection and Metrology (Statens provnings-anstalt). The standard specifies tear tolerance length and folding endurance and states that paper should have requisite water resistance, surface evenness, opacity, erasibility, purity and whiteness.(6)

2.2.7 United States of.America

American Society for Testing and Materials : standards

D 3458-75, Copies from office copying machines for permanent records,

Covers both the image and the paper for use in plain or coated paper copiers. Three types of paper are specified :
type 1 : maximum permanence, lasting for several hundred years,
type 2 : high permanence, lasting for over one hundred years,
type 3 : medium permanence, lasting for over 50 years.
Within these types, two grades are specified :
grade 1 : ordinary use,
grade 2 : high referral, having a higher tearing resistance.

Specifies :
- stock : cotton, linen or fully bleached wood pulp, free from unbleached wood or ground wood,
- pH : 7.5 to 9.5 for type 1,
  : 6.5 minimum for type 2,
  : 5.5 minimum for type 3,
- filler : alkaline filler of calcium or magnesium carbonate, equivalent to 2% calcium carbonate based on oven dry weight of the paper (type 1 paper for use in plain paper copiers only),
- internal tearing resistance,
- brightness,
- fluorescence,
- opacity,
- folding endurance,
- accelerated ageing : after 72 hours at 105 °C, types 1 and 2 are to retain 80% of their tearing resistance and folding endurance; type 3 is to retain 80% of its tearing resistance and 60% of its folding endurance.

D 3208-81, Manifold Papers for Permanent Records,

Specifications for paper for second (carbon) copies of documents. Three types of paper are covered :
type 1 : maximum permanence,lasting for several hundred years,
type 2 : high permanence,lasting for over 100 years,
type 3 : medium permanence,lasting for over 50 years.

Within these types, two grades are specified :
grade 1 : ordinary use,
grade 2 : high referral, having a minimum average folding endurance of 300 double folds.

Specifies
- stock : new or bleached cotton, linen, flax or bleached wood; free from unbleached wood or groundwood,
- pH : type 1 : 7.5-9.5,
  type 2 : 6.5-8.5,
  type 3 : 5.5 minimum,
- filler : an alkaline filler of calcium or magnesium carbonate, equivalent to 2% calcium carbonate, based on the oven dry weight of the finished paper (type 1 only),
- folding endurance (high referral paper only),
- internal tearing resistance,
- br ghtness,
- fluorescence.

D3290-81, Bond and Ledger Paper for Permanent Records
Specifications for strong permanent papers for writing or printing. Three types of paper are covered :
type 1 : maximum permanence, expected to last several hundred years,
type 2 : high permanence, expected to last more than 100 years,
type 3 : medium permanence, expected to last 50 - 100 years.
Within these types,two grades are specified :
grade 1 : ordinary use,
grade 2 : high referral, having a higher internal tearing resistance.

Specifies
- stock : new cotton, linen, or bleached wood; free from unbleached wood or groundwood,
- pH : type 1 : 7.5-9.5,
  type 2 : 6.5-8.5,
  type 3 : 5.5 minimum,
- filler : alkaline filler of calcium or magnesium carbonate, equivalent to 2% calcium carbonate, based on the oven dry weight of the paper (type 1 only),
- internal tearing resistance,
- brightness,
- fluorescence,
- opacity.

The Council on Library Resources, Committee on Production Guidelines for Book Longevity : guidelines for book paper, 1981; these recommended a pH of 7.5, a minimum alkaline reserve of 2% based on oven dry weight and also specified folding endurance and tear resistance. Restaurator, 4, pp.239-247.

American National Standards Institute,ANSI Z39.48-1984, Permanence of paper for printed library materials
Provides criteria for uncoated paper which should last several hundred years without significant deterioration, if kept under normal conditions of library use and storage.

Specifies
- stock : free from groundwood or unbleached pulp,
- pH : 7.5 minimum,
- alkaline reserve : equivalent to 2% calcium carbonate based on oven dry weight of the paper,
- folding endurance,
- tear resistance.

2.3 MISCELLANEOUS STANDARDS FOR NON ARCHIVAL PAPERS

2.3.1 BANGLADESH BDS 405 1964 Writing and printing papers. Specifications for a wide range of papers.

2.3.2 BRAZIL Instrucao Normativa no. 83, 1978. Gives specifications for papers to be used by the public service.

2.3.3 CANADA CGSB-9-GP-37M 1979 Index Bristol. Specifications for index and other cards.

2.3.4 CZECHOSLOVAKIA CSN 50 2417 1975 Finished paper.

2.3.5 FRANCE

2.3.5.1 NF Q 00-001 1973 General information concerning papers and cardboards. Lists the physical characteristics of paper and the relevant French standards.

2.3.5.2 NF Q 01-002 1973 List of papers and cardboards classified according to use. Refers to the relevant French standards.

2.3.5.3 NF Q 01-007 1977 Nomenclature for the names relating to fibre composition. Specifies types of paper and the percentage of mechanical or chemical wood pulp each may contain.

2.3.5.4 NF Q 11-007 1977 Characteristics of paper for index cards.

2.3.5.5 NF Z 10-001 1982 Paper for printed forms and other office supplies for use by government services, public services and similar bodies (requirements in respect of use, quality and dimensions). Provides information about types of paper and their qualities and suitability for particular uses. Advocates the use of, and is printed on, recycled paper.

2.3.6 GERMAN DEMOCRATIC REPUBLIC
2.3.6.1 TGL 3044/01 Paper for writing and typewriting : sizes and formats.
2.3.6.2 TGL 3044/02 Paper for writing and typewriting : technical requirements. Specifies mass, sizing, whiteness, cleanliness, tinting, moisture capacity and test methods.

2.3.7 GERMAN FEDERAL REPUBLIC DIN 827 1975 Paper, classes of fibre materials. Classifies paper according to fibre content.

2.3.8 INDIA IS 1848 1971-1981 Writing and printing papers. Lists types of paper and gives specifications for physical properties for each type.

2.3.9 IRAN ISIRI 501 1971 Classification and definition of characteristics and tolerances of paper and board.

2.3.10 NORWAY NS 4136 1982 Paper and board for office use. Gives sizes and types of paper.

2.3.11 PAKISTAN PS 405 1981 Specification for writing and printing papers. Specifications for a wide range of papers.

2.3.12 POLAND PN 50007 1976 Paper products, names, definitions and classification.

2.3.13 ROMANIA STAS 106 1978 Finished products of paper industry. Rules for quality control.

2.3.14 THAILAND TIS 287 Standard for printing and writing papers.

2.4 STANDARDS FOR PRINTING PAPERS

2.4.1 AUSTRIA ONORM 1031 1984 Paper for continuous forms.

2.4.2 BANGLADESH BDS 845 1977 Newsprint.

2.4.3 BULGARIA
2.4.3.1 BDS 6454 1972 Wood pulp paper for printing,
2.4.3.2 BDS 6985 1973 Paper for offset printing,
2.4.3.3 BDS 11255 1973 Thin paper for surface printing,

2.4.3.4 BDS 6381 1973 Cellulose paper for surface printing,
2.4.3.5 BDS 9739 1977 Newsprint.

2.4.4 CANADA
2.4.4.1 CGSB-9-GP-36M 1979 Printing paper, Bristol,
2.4.4.2 CGSB-9-GP-40M 1979 Paper, mimeograph,stencil,duplicating,
2.4.4.3 CGSB-9-GP-28Ma 1982 Paper, no.1 & no.2, offset,
2.4.4.4 CGSB-9-GP-29Ma 1982 Paper,book, no.1 and no.1 opaque.

2.4.5 CHINA GB 1910-80 Newsprint.

2.4.6 CZECHOSLOVAKIA
2.4.6.1 ON 50 2185 1970 Bible paper,
2.4.6.2 ON 50 2171 1971 Paper for continuous forms,
2.4.6.3 CSN 50 2121 1978 Printing papers, general provisions,
2.4.6.4 CSN 50 2124 1979 Rotogravure paper,
2.4.6.5 CSN 50 2123 1980 Offset paper,
2.4.6.6 CSN 50 2101 1981 Newsprint.

2.4.7 GERMAN DEMOCRATIC REPUBLIC
2.4.7.1 TGL 3063/01 Paper for printing by offset litho, size and formats,
2.4.7.2 TGL 3063/02 Paper for printing by offset litho, technical requirements,
2.4.7.3 TGL 12254/02 Paper for printing forms, technical requirements,
2.4.7.4 TGL 24357/02 Thick paper for book printing, technical requirements,
2.4.7.5 TGL 24553/02 Thin printing paper, technial requirements,
2.4.7.6 TGL 24554/01 Machine coated offset printing paper,
2.4.7.7 TGL 28996 Machine coated illustration printing paper,
2.4.7.8 TGL 37886/02 Illustration printing paper.

2.4.8 GERMAN FEDERAL REPUBLIC DIN 19306 1977 Letterpress paper, offset paper, rotagravure paper, technical conditions of delivery.

2.4.9 HUNGARY
2.4.9.1 MSZ 8116 1976 Gravure printing paper,
2.4.9.2 MSZ 8103 1978 Technical requirements for newsprint.

2.4.10 ISRAEL
2.4.10.1 SI 696 1968 Printing paper : general requirements,
2.4.10.2 SI 715 1968 Paper for printing by relief or letterpress,
2.4.10.3 SI 716 1968 Paper for printing by offset process,
2.4.10.4 SI 684 1975 Newsprint.

2.4.11 JAPAN
2.4.11.1 JIS P 3101-3104 1958 Printing papers,
2.4.11.2 JIS P 3001 1976 Newsprint,
2.4.11.3 JIS S 5509 1976 Report papers,
2.4.11.4 JIS P 4502 1978 Paper for business forms.

2.4.12 JORDAN
2.4.12.1 JSS 81 1978 Offset paper,
2.4.12.2 JSS 82 1978 Letterpress paper.

2.4.13 KOREA
2.4.13.1 KS M 7101 1974 Newsprint,
2.4.13.2 KS M 7102 1974 Printing paper.

2.4.14 MALAYSIA MS 855 1983 Newsprint.

2.4.15 PAKISTAN PS 1355 1975 Newsprint.

2.4.16 POLAND
2.4.16.1 P 95007 1959 Offset paper and paperboard,
2.4.16.2 BN 65,7321-04 1965 Letterpress printing paper,
2.4.16.3 P 50402 1979 Newsprint.

2.4.17 ROMANIA
2.4.17.1 STAS 2662 1971 Printing paper : offset printing paper,
2.4.17.2 STAS 494 1980 Letterpress printing paper : edition papers,
2.4.17.3 STAS 7283 1980 Offset printing paper : rotaprint paper,
2.4.17.4 STAS 7403 1980 Letterpress printing paper : bible paper,
2.4.17.5 STAS 260 Relief printing paper : newsprint paper.

2.4.18 SPAIN UNE 57-077 1974 Paper for offset printing.

2.4.19 UNION OF SOVIET SOCIALIST REPUBLICS
2.4.19.1 GOST 6445 1974 Newsprint,
2.4.19.2 GOST 7317 1978 Printing paper : technical specifications,
2.4.19.3 GOST 9094 1983 Offset printing paper : specifications,
2.4.19.4 GOST 9095 1983 Printing paper : specifications.

2.5 STANDARDS FOR WRITING PAPERS

2.5.1 ARGENTINA IRAM 3100 1967 White writing paper.

2.5.2 BANGLADESH BDS 409 1964 Stationery for correspondence.

2.5.3 BULGARIA
2.5.3.1 BDS 9259 1971 Lined paper for writing,

2.5.3.2 BDS 9258 1971 Correspondence paper,
2.5.3.3 BDS 6799 1972 Writing paper for offices.

2.5.4 CANADA
2.5.4.1 CGSB-9-GP-33M 1970 Airmail paper,
2.5.4.2 CGSB-9-GP-50M 1979 Paper, register bond.

2.5.5 CHINA QB 28-73 Writing paper.

2.5.6 CZECHOSLOVAKIA
2.5.6.1 CSN 50 2844 1974 Airmail paper,
2.5.6.2 CSN 88 6101 1979 Letter paper for economic and official correspondence,
2.5.6.3 CSN 50 2251 1980 Writing paper.

2.5.7 FRANCE
2.5.7.1 NF Q 11-006 1975 Characteristics of paper for memoranda books,
2.5.7.2 NF Q 11-005 1976 Paper for record books.

2.5.8 ISRAEL SI 667 1984 Writing paper.

2.5.9 JAPAN JIS P 3201-3203 1958 Writing papers.

2.5.10 JORDAN JSS 51 1978 Writing papers.

2.5.11 KOREA KS M 7100 1975 Writing paper.

2.5.12 MOROCCO NM 20.02-C-007 1975 Letter paper.

2.5.13 PAKISTAN PS 409 1964 Stationery for correspondence.

2.5.14 POLAND BN 68,7323-02 1968 Writing paper.

2.5.15 ROMANIA STAS 400 1980 Writing paper.

2.5.16 UNION OF SOVIET SOCIALIST REPUBLICS
2.5.16.1 GOST 18510 1973 Writing paper,
2.5.16.2 GOST 6657 1977 Writing paper : technical requirements.

2.6 PAPER FOR TYPEWRITERS AND DUPLICATORS

2.6.1 ARGENTINA IRAM 3102 1982 Paper for typed copies.

2.6.2 BULGARIA
2.6.2.1 BDS 3935 1980 Copying paper,
2.6.2.2 BDS 2199 1983 Cartridge paper.

2.6.3 CANADA
2.6.3.1 CGSB-9-GP-39M 1979 Paper, manifold,
2.6.3.2 CGSD-9-GP-44M 1979 Paper, duplicating, spirit process.

2.6.4 CHINA
2.6.4.1 QB 30-73 Typewriter paper,
2.6.4.2 GB 1911-80 Copying paper.

2.6.5 CZECHOSLOVAKIA
2.6.5.1 ON 50 2295 1972 Manifold paper,
2.6.5.2 ON 50 2295 1982 Letter-copying paper.

2.6.6 FRANCE
2.6.6.1 NF Q 11-001 1975 Characteristics of typewriting papers.
2.6.6.2 NF Q 11-002 1976 Characteristics of papers for ink duplicators.

2.6.7 GERMAN FEDERAL REPUBLIC DIN 6734 1965 Duplicating paper for stencil duplicators : types of material and characteristics.

2.6.8 MALAYSIA
2.6.8.1 MS 285 1975 Paper (duplicating, copy, liquid process),
2.6.8.2 MS 332 1976 Typewriting paper.

2.6.9 MOROCCO
2.6.9.1 NM 20.02-C-006 1975 Paper for typewriters,
2.6.9.2 NM 20.02-C-008 1975 Paper for duplicators.

2.6.10 POLAND BN 69,7322-01 1970 Typewriting paper.

2.6.11 UNION OF SOVIET SOCIALIST REPUBLICS GOST 5.760 1971 Duplicator paper : quality requirement for certified products.

2.7 PAPER FOR ELECTROSTATIC COPIERS

2.7.1 BULGARIA BDS 12570 1981 Paper for reprographic copies.

2.7.2 CANADA CGSB-9-GP-51M 1982 Paper, xerographic copier, dry toner.

2.7.3 CZECHOSLOVAKIA CSN 66 6663 1979 Reprographic materials, electrographic papers, technical requirements.

2.7.4 ROMANIA STAS 10 831 1976 Paper for xerographic copies.

3 STANDARDS FOR INKS

3.1 STANDARDS FOR INKS FOR WRITING

There are a relatively large number of standards for inks for fountain pens and dip pens, but there are unfortunately, very few for ball point pens and even fewer for fibre or felt tipped pens. This is an area in which technology has outrun the makers of standards.

There appear to be two fundamental problems in setting standards for writing inks in the modern world. The first is that the technology is changing rapidly. Since 1945, the traditional iron gall inks have given way to dye-based inks (two thirds of the standards for iron-based inks date from before 1965). Fountain pens have replaced dip pens and they, in their turn, have been overtaken by ball point pens and, more recently, by felt or fibre tipped pens. The second problem appears to be one of enforcement. Although it is possible to specify the use of permanent inks for formal records, such as registers of births, it is much less easy to ensure that individual civil servants use such inks for their ordinary day to day business.

Attempts have been made to solve these problems in the Swedish Ordinance concerning the use of writing materials for state business (1964 : 504). This lays down that records intended for permanent preservation (including letters to the government or head of a ministry, letters of special significance to other authorities, letters of legal or other importance to private persons and other non-disposable documents), should be written with approved materials. To be approved, inks of any variety should be as resistant to the effects of daylight, air, water and alcohol as an iron-gall ink of standard composition. It is reported that this standard has been useful in controlling the numerous new writing materials.(6)

This approach of establishing a general standard for all writing inks based on comparison with a reference ink of known composition is probably the only satisfactory way of coping with a situation in which technology is changing and in which the traditional approach of specifying the composition of the ink has lost much of its validity.

3.2 STANDARDS FOR INKS FOR USE IN FOUNTAIN PENS OR DIP PENS

3.2.1 INTRODUCTION

The standards for writing inks are largely based on observations over a long period. Manuscripts written in iron gall-ink date

back as far as the seventh or eighth century A.D. and many early examples are still clear and legible, although badly prepared ink can fade or even be so acidic as to seriously damage the paper. Research has been carried out into the best proportions of the various ingredients in such inks since the middle of the eighteenth century.(7) In the 1930s, concern about the effects of acidic ink on records led the USA National Bureau of Standards to publish a specification for an alkaline writing ink based on ammonium ammoniumoxyferrigallate.(8)

The qualities of a good ink are that it should yield permanent writing; it should flow readily from the pen and penetrate well into the fibres of the paper without passing right through it; it must not gelatinize or become mouldy and it must not be sticky. From the archivist's point of view, it is essential that the ink should not be too acid and thus affect the paper.

Attempts to produce standards for writing inks appear to date back to 1879 when Professor Koester of Bonn wrote to the German Chancellor pointing out the danger of using aniline dyes for historical documents because of their instabililty. In the same year, Prussia passed a law that only iron-gall inks should be used officially. In 1888, rules for testing inks were published and these were revised in 1912. These Prussian regulations have profoundly influenced later standards and, although differing in detail, most standards for inks for use in dip pens and fountain pens appear to be based on them.

The Prussian standard of 1912 specified two types of ink : documentary and writing. It laid down the quantity of iron and gallotannic and gallic acids in each type. Methods of determining their composition are given. Finally, the ink is tested for its resistance to light, water and alcohol in comparison with an ink of known composition.(9) This approach of specifying the quantities of materials in the ink and then testing it against an ink of known composition is the one used in most of the standards listed below.

The standards listed below for iron gall ink normally specify :
1. The composition of the ink (iron content and, in some cases, ratio of iron to acid).
2. Corrosive action or acidity.
3. Freedom from sediment.
4. Stability : the ink is exposed to the air for two weeks and then examined for sediment.
5. Penetration : the ink shall not penetrate excessively into good quality paper.
6. Permanence : the ink is exposed for a specified period to

daylight, ultra-violet light, water and alcohol.
The standards from Argentina (IRAM 3025) and New Zealand (NZSS 514) specify that the ink should also be tested by immersion in a bleaching solution.
7. Flow : the ink to flow freely.
8. Colour : to match a standard reference ink.
In the case of items 3, 4, 6, 8 and sometimes 2, the ink is to be tested against a standard reference ink of known composition.

The specifications for dye based inks are similar to those for iron gall ink, but normally specify the dyes to be used.

3.2.2 ARGENTINA
3.2.2.1 IRAM 3025 1956 Blue-black ink,
3.2.2.2 IRAM 3026 1958 Blue ink for ordinary writing.

3.2.3 BANGLADESH
3.2.3.1 BDS 86 1959 Dye-based coloured fountain pen inks,
3.2.3.2 BDS 85 1960 Blue-black fountain pen inks,
3.2.3.3 BDS 87 1960 Ink powders and tablets, blue-black and red (ink powders and tablets which dissolve in water to give a writing fluid),
3.2.3.4 BDS 88 1960 Blue-black fluid writing ink,
3.2.3.5 BDS 89 1960 Fluid ink for registration and for cheques and records (red and black inks).

3.2.4 CHINA QB 551-81 Blue-black ink.

3.2.5 CZECHOSLOVAKIA
3.2.5.1 CSN 90 4140 1953 Blue-black fountain pen ink,
3.2.5.2 CSN 90 4150 1954 Documentary ink.

3.2.6 DENMARK DS 2058 1969 Inks for permanent writing (iron gall inks).

3.2.7 HUNGARY MSZ 20504 1961 Blue ink for fountain pens.

3.2.8 INDIA
3.2.8.1 IS 221 1962-1977 Ink fluid, blue-black, for permanent records,
3.2.8.2 IS 222 1962-1977 Ink fluid for general purposes,
3.2.8.3 IS 1221 1971-1975 Dye based fountain pen inks (non-permanent coloured inks),
3.2.8.4 IS 220 1972-1979 Ferro-gallo-tannate fountain pen ink (0.1% iron content); designed for the creation of permanent records,
3.2.8.5 IS 1581 1975 Ferro-gallo-tannate fountain pen ink (0.2% iron content). This is intended as a more permanent version of

IS 220,
3.2.8.6 IS 219 1975 Ink powder and tablets, black and red inks (ink powders and tablets which dissolve in water to give a writing fluid),
3.2.8.7 IS 8642 1977 Dyes for water based writing inks.

3.2.9 IRAN ISIRI 309 1966 Fountain pen ink, dye base.

3.2.10 IRAQ IOS 808 1978 Blue-black writing inks.

3.2.11 ISRAEL
3.2.11.1 SI 151 1955 Writing ink on iron base,
3.2.11.2 SI 248 1957 Writing ink on organic dye bases.

3.2.12. KOREA KS G 2301 1972 Writing inks.

3.2.13 MEXICO R 11 1950 Blue-black writing ink.

3.2.14 NEW ZEALAND NZ SS 514 1948-1966 Writing, fountain pen and record inks and ink powders (iron gall inks).

3.2.15 PAKISTAN
3.2.15.1 PS 86 1959 Dye based coloured fountain pen inks,
3.2.15.2 PS 85 1960 Fountain pen ink, blue-black,
3.2.15.3 PS 87 1960 Ink powders and tablets, blue-black and red,
3.2.15.4 PS 88 1960 Blue-black fluid writing ink,
3.2.15.5 PS 89 1960 Fluid ink for registration and for cheques and records.

3.2.16 ROMANIA STAS 5898 1979 Fountain pen ink : general requirements for quality.

3.2.17 SRI LANKA
3.2.17.1 CS 33 1961 Permanent blue-black writing inks,
3.2.17.2 CS 57 1969 Permanent blue-black ink for fountain pens,
3.2.17.3 CS 58 1969 Permanent blue-black writing ink for dip pens,
3.2.17.4 CS 59 1969 Washable ink for fountain pens,
3.2.17.5 CS 60 1969 Record ink.

3.2.18 SWEDEN The relevant standards are included in the Ordinance concerning the use of writing materials for state business (1964 : 504); see section 3.1 above.

3.2.19 UNITED KINGDOM
3.2.19.1 BS 3484 1962 Blue-black record inks,
3.2.19.2 BS 3657 1963 Blue-black writing inks; this is intended as a cheaper and more readily available version of BS 3484,

having a lower iron content.

3.3 STANDARDS FOR INKS FOR BALL POINT PENS,MARKING PENS,ETC.

3.3.1 INTRODUCTION

There are a number of standards for modern writing materials. They have several features in common : they are mostly very much related to the value of the pen as a consumer product and specify such features as its starting characteristics, performance after accelerated ageing, as well as the writing quality, coverage and drying time of the ink. Unlike archival paper or fountain pen inks, very little has been published on the permanence of ball point pen inks or similar products and consequently, it is difficult to assess these standards. Except for the Swedish example, they do not normally include a comparison with a known permanent ink. They do include some measures of permanence, including, in some cases, specifications for light fastness, resistance to water and to certain chemicals.

3.3.2 BULGARIA BDS 8126 1974 Ball pen ink.

3.3.3 CANADA

3.3.3.1 CGSB-53-GP-53M 1978 Ball point pen. Specifies :
writing quality,
light fastness : after 24 hours in an Atlas Fade-Ometer, the black, blue and green inks shall not show more than a 20% decrease in reflection density; the red ink shall not show more than a 40% decrease;
resistance to water : there should be no discolouring or spreading after the ink has been allowed to dry for 24 hours and then brushed 30 times with a camel hair brush dipped in distilled water.

3.3.3.2 CGSB-53-GP-114M 1978 Marker, tube type for use in writing. For markers with felt or porous plastic nibs, using inks which are insoluble in water. Specifies :
shelf life,
startability,
drying time,
light fastness : the black ink should be exposed for 16 hours in an Atlas Fade-Ometer, other inks should be exposed for 8 hours. Yellow colours should not show more than a 10% decrease in reflection density, orange inks should not show more than a 20% decrease and other colours not more than 30%;
resistance to water : after being immersed in water for 4 hours, the ink shall not smudge, or show a marked change in colour or shade;
accelerated ageing : after the pen has been aged at 60+/- 1°C for

7 days, the ink shall not show any marked change in colour or shade.

3.3.3.3 CGSB-53-GP-116M 1978 Pen, porous nib (used for writing or marking, with either a water soluble or insoluble ink). Specifies :
writing qualities,
drying time,
lightfastness : after 8 hours in an Atlas Fade-Ometer, the yellow, orange and pink colours shall not show more than a 20% decrease in reflection density, the other colours shall not show more than a 40% decrease;
resistance to water : after being immersed in water for 4 hours, the ink shall not smudge, or show a marked change in colour or shade;
bleeding : in the case of water soluble ink, the ink shall not bleed through one sheet of glazed onion skin paper;
accelerated ageing : after the pen has been aged for 7 days at 60+/- 1°C, the ink shall not show a marked change in colour or shade.

3.3.4 CZECHOSLOVAKIA ON 90 4191 1965 Writing pastes for ball point pen fillers.

3.3.5 GERMAN FEDERAL REPUBLIC DIN 16554 1982 Ball point pen refills. Specifies : light fastness, resistance to water, resistance to alcohol, resistance to chemicals and accelerated ageing.

3.3.6 INDIA IS 5805 1970 Specification for ball point pen ink. Specifies :
composition,
coverage,
smoothness or line continuity,
starting characteristics,
drying time,
non-transferability,
resistance to water : not to be completely removed by water;
resistance to bleach : not to be completely removed by two applications of sodium hypochlorite;
resistance to light : not to fade after exposure for 24 hours to ultra violet light (125 watts at 3655A),
writing capability on a greasy surface,
feathering and penetration,
reproduction capability,
accelerated ageing : after humid ageing for 9 days, the ink should still write.

3.3.7 NIGERIA NIS 39 1974 Ball point pen ink. Specifies :
composition,
coverage,
drying time,
smoothness and line continuity,
starting characteristics,
resistance to water : the ink not to be completely removed after immersion for 48 hours;
non-transferability,
accelerated ageing : the ink should still write after the pen has been humidified for 168 hours at 85-90% and 35°C+/-5°C.

3.3.8 SWEDEN Ordinance 504 of 1964 relates to ball pens as well as to other writing materials, see section 3.1 above.

3.3.9 USSR GOST 24226 1980 Ball pen inks : specifications.

3.4 STANDARDS FOR TYPEWRITER RIBBONS

3.4.1 INTRODUCTION

Only six countries have been identified as having standards for typewriter ribbons. This appears to be another case in which technology has outrun the makers of standards because, apart from the Swedish example, these standards are concerned with traditional fabric ribbons, rather than the modern style film ribbons. The standards are mainly concerned with the manufacture and performance of the ribbons, although they contain a light fade test. Personal observation leads to the conclusion that there has been an improvement in the quality of typewritten documents. The images of early ribbons were composed of dyes in spirit or water and glycerin and tend to fade or smudge; the images of modern ribbons are based on carbon and seem to be much more durable.

3.4.2 ARGENTINA

3.4.2.1 IRAM 3027 1982 Cotton typewriter ribbons. Specifies : material, colour,inking and fade resistance,
3.4.2.2 IRAM 3037 1982 Nylon typewriter ribbons. Specifies : material, colour, inking and fade resistance.

3.4.3 BANGLADESH BDS 236 1964 Ribbon, typewriter. Specifies : structure, inking, writing qualities, light fastness : the black ink to show no sign of fading after being exposed to a glass enclosed carbon arc lamp for 48 hours; the red ink to remain legible after being exposed for 24 hours to a glass enclosed carbon arc lamp.

3.4.4 CANADA
3.4.4.1 CGSB-53-GP-6M 1977 Typewriter ribbon, cotton. Specifies : inking, workmanship, size, weardown (durability), writing qualities, recovery, type filling, oiliness, light fastness : to show no marked fading after 48 hours in the Atlas Fade-Ometer.
3.4.4.2 CGSB-53-GP-47M 1977 Typewriter ribbon, nylon. Specifications : as 3.4.4.1,
3.4.4.3 CGSB-53-GP-81M 1977 Typewriter ribbon, nylon, offset. Specifies : inking, workmanship, size, writing qualities, accelerated ageing of the ribbon : the ribbon to be able to produce clear typing after 5 days at 66+/-1°C.

3.4.5 MALAYSIA
3.4.5.1 MS 792 1982 Typewriter ribbon, nylon. Specifies : inking, workmanship, fabric, size, weardown (durability), writing qualities, type filling, oiliness, light fastness : to show no marked fading after exposure for 48 hours to a xenon arc lamp.
3.4.5.2 MS 793 1982 Typewriter ribbon, cotton. Specifications : as 3.4.5.1.

3.4.6 PAKISTAN PS 236 1964 Typewriter ribbon. Specifies : structure, inking, writing qualities, light fastness : the black ink to show no sign of fading after being exposed to a glass enclosed carbon arc lamp for 48 hours; the red ink to remain legible after being exposed for 24 hours to a glass enclosed carbon arc lamp.

3.4.7 SWEDEN the relevant standards are included in Ordinance 504 of 1964, see section 3.1 above.

3.5 STANDARDS FOR STAMP PAD INKS

3.5.1 INTRODUCTION

Stamp pad inks are of great importance to archivists, because they are frequently used for security marking and foliation. The stamp pad inks commonly in use are made from dyes or pigments in alcohol, water and glycerin. Apart from the ink produced by the Library of Congress, there appear to be no standards issued by archivists for these materials. The Library of Congress material is the most suitable for archives as it covers both the security aspects of the ink (its resistance to solvents and acids and light), as well as its archival aspects (neutral pH, non-damaging to manuscripts, non-bleeding and non-migrating). Although the Library of Congress has not produced a formal standard for its stamp pad ink, its claims for this product are a suitable model against which other inks can be tested. Some other standards are not wholly satisfactory for use in archives as they do not cover

the security of the ink (its resistance to solvents or bleaches) nor do they specify a suitable pH or insist that the ink should be non-damaging to records.

3.5.2 BANGLADESH BDS 90 1959 Ink, stamp pad. Specifies : composition, colour of ink and performance of pad.

3.5.3 CANADA
3.5.3.1 CGSD-53-GP-12M 1978 Ink, stamp pad. Specifies :
drying time,
performance,
light fastness : after 24 hours in an Atlas Fade-Ometer at 63+/-3° C, there should be no noticeable fading of black ink, although some fading is acceptable with other colours;
stability : the pad should still function after being left uncovered for 10 days;
3.5.3.2 CGSD-53-GP-49M 1978 Ink, numbering machine,
Specifies :
stability,
performance,
drying time,
fading : not more than a slight degree of fading after 24 hours' exposure to a glass enclosed carbon arc lamp.

3.5.4 HUNGARY MSZ 6758 1957 Ink for rubber stamps.

3.5.5 INDIA IS 393 1975-1976 Ink, stamp pad. Specifies :
colours,
composition,
light fastness : to be exposed to ultra violet light (125 watts,3655A) for 36 hours and to daylight for 8 days.

3.5.6 NEW ZEALAND NZ SS 515 1948 Stamp pad ink. Specifies :
colour,
drying time,
light fastness : to be exposed for 48 hours in a window facing north;
performance of pad : not to absorb moisture or dry out.

3.5.7 PAKISTAN PS 90 1960 Ink,stamp-pad. Specifies : composition, colour of ink and performance of pad.

3.5.8 POLAND BN.64,8541-09 1965 Ink for rubber stamps.

3.5.9 UNITED STATES OF AMERICA The Library of Congress have produced a paper manuscript marking ink which they will supply without charge, but they will not reveal its formula. A detailed specification is given in Preservation Leaflet 4, Marking

Manuscripts. It is claimed that the ink conforms to the following standards :
Resistant to the strongest solvents and bleaches,
pH of 7.0 to 7.5 and non-damaging to documents,
Non-bleeding and non-migrating on normal manuscript papers when properly applied,
Fade-resistant, having withstood 160 days in the Fadeometer test,
Stable to heat in excess of 100°C,
Resistant to artificial ageing,
Dry within 15 minutes.

3.6 STANDARDS FOR INKS FOR PRINTING

3.6.1 INTRODUCTION

It is perhaps not surprising that standards for printing inks are primarily concerned with the performance of the inks and their suitability for their intended use, rather than with permanence and archival qualities. The ISO has published a number of standard test methods,(10), including some which may be of value in assessing permanence :
ISO 2835 1974 Light fastness,
ISO 2836 1974 Resistance to water,
ISO 2837 1974 Resistance to solvents,
ISO 2838 1974 Resistance to alkalis,
The other ISO standards are concerned mainly with the performance and suitability of ink in particular applications, notably for printing packaging. These ISO standards have also been issued as common European standards by the European Committee of Paint, Printing Ink and Artists' Colours Manufacturers' Associations.
National standards which conform to ISO or European standards have not been listed.

3.6.2 CANADA
3.6.2.1 CGSB-21-GP-1M 1977 Ink, printing, offset lithographic. Covers fineness of grind, tack, drying rate, plastic viscosity and yield value, rub resistance, light fastness (the ink to show no colour change after 20 hours in an Atlas Fade-Ometer), colour, suitability for use and shelf life.
3.6.2.2 CGSB-21-GP-2M 1977 Ink, printing, letterpress. Details as 3.6.2.1.
3.6.2.3 CGSB-21-GP-6M 1977 Ink, printing, offset duplicator, black. Details as 3.6.2.1.

3.6.3 CZECHOSLOVAKIA CSN 88 0125 1963 Printing inks.

3.6.4 GERMAN DEMOCRATIC REPUBLIC:
3.6.4.1 TGL 33067-01-03 1977 Coloured printing inks, for

multicolour printing. Letterpress and offset printing inks,
3.6.4.2 TGL 13560-01-04 1980 Black inks for letterpress and offset printing,
3.6.4.3 TGL 28519-01-03 1980 Coloured and white printing inks for sheet fed printing presses. Offset printing inks.
These standards cover fastness to light and alkalis, viscosity, speed, fineness of grinding, removeability, rub-resistance, heat resistance etc.

3.6.5 INDIA
3.6.5.1 IS 6830 1973-1975 Offset ink, black, general purpose. Covers : general requirements, composition, hue, tinting strength, fineness of dispersion, density, printing strength, distribution, covering power, strike through and show through, drying time and setting time,
3.6.5.2 IS 7771 1975-1976 Letterpress half tone ink, black. Specifications : as 3.6.5.1,
3.6.5.3 IS 5046 1975 Letterpress ink, black, bookprinting. Specifications : as 3.6.5.1,
3.6.5.4 IS 2105 1975 Letterpress ink, black, general purpose.Specifications : as 3.6.5.1,
3.6.5.5 IS 8744 1978 Rotary letterpress newsprint ink, black. Covers : composition, hue, tinting strength, fineness of dispersion and coarse particles, viscosity, flowability, penetration and permeability, drying time on paper, printing strength, distribution, covering power and strike through.

3.6.6 IRELAND IS 76 1956 News ink for rotary presses. Covers : qualities of carbon black and mineral oil, viscosity, grinding, strike through, performance and keeping qualities.

3.6.7 JAPAN
3.6.7.1 JIS K 5704 1957 Mimeograph ink,
3.6.7.2 JIS K 5703 1958 Press ink.

3.6.8 PAKISTAN PS 1434 1979 Letterpress ink, black, general purpose. Covers : hue, tinting strength, fineness of dispersion, density, printing strength, distibution and covering power, strike through and show through, drying time, setting time, resistance to rubbing, viscosity and tack.

3.6.9 ROMANIA STAS 6696 1974 Printing inks : range of standard inks for letter press printing.

3.6.10 SRI LANKA SLS 341 1983 Black letterpress ink.

3.6.11 UNITED KINGDOM
3.6.11.1 BS 3020 1959-1980 Improved inks for letterpress four

colour printing. Covers : colour, colour strength, transparency and light fastness,
3.6.11.2 BS 4160 1967-1980 Inks for letterpress three or four colour printing. Covers : colour, colour strength, transparency, light fastness and solvent resistance,
3.6.11.3 BS 4666 1971-1981 Inks for offset three or four colour printing.

3.7 STANDARDS FOR INKS FOR DUPLICATORS

3.7.1 INTRODUCTION

In recent years, duplicating machines have largely been replaced in developed countries by electrostatic copiers or offset lithography machines. They are widely used in lesser developed countries and by some small organizations in the developed world. The instability of the images produced by these processes are well known; spirit based duplicating inks are particularly liable to fade.

None of the standards listed below are in any sense archival; they are concerned solely with the manufacture and performance of the inks rather than their permanence or durability.

3.7.2 BANGLADESH BDS 146 1961 Ink, duplicating, all weather for rotary type machines.

3.7.3 CANADA CGSB-53-GP-7b 1971 Duplicating liquid, direct process, spirit.

3.7.4 INDIA
3.7.4.1 IS 1222 1973 Ink, duplicating for twin cylinder rotary machines.
3.7.4.2 IS 1333 1973-1978 Ink, duplicating, for single drum rotary machines.

3.7.5 KOREA KS M 5953 1976 Duplicating ink, black.

3.7.6 MALAYSIA MS 403 1976 Ink paste, black (stencil duplicating machine).

3.7.7 PAKISTAN PS 146 1961 Duplicating ink, all weather, black for rotary type machines.

3.7.8 POLAND BN 8547 1975 Ink for duplicators.

3.7.9 SINGAPORE SS 107 1974 Duplicating ink for twin cylinder rotary machines.

3.7.10 SRI LANKA CS 169 1972 Stencil duplicating ink.

3.8 STANDARDS FOR PHOTOCOPIER IMAGES

Only one standard has been found on this subject : American Society for Testing and Materials : Standard Specification for Copies from Office Copying Machines for Permanent Records (ASTM D 3458-75 Part 2). This specifies that the average print contrast ratio shall not decrease by more than 20% of the original value after exposure to a xenon lamp for 96 hours at 25°C and 50% relative humidity and that after abrasion with a standard wheel for 20 cycles, the average print contrast ratio shall not decrease by more than 20% of the original value. This standard was introduced in 1975, having been drafted in 1973. In 1980, the standard came up for automatic review; by then, the office copier field had changed so much that 'only practically obsolete types of "printing" passed the test.(11)

4 DIRECTORY

This is arranged by countries and by issuing institutions. It indicates whether there have been any responses to the questionnaire or whether any relevant information was supplied in response to the questionnaire issued by Michael Roper in connection with his RAMP Study Directory of national standards relating to archives administration and records management (referred to as M.R. survey). It lists all standards found and gives the addresses from which they can be obtained. In the case of those standards which are summarized in sections 2 or 3, references to the relevant subsections are given.

4.1 AFGHANISTAN : no return to survey, no standards found.

4.2 ALBANIA : no return to survey, no standards found.

4.3 ANGOLA : negative return to M.R. survey.

4.4 ARGENTINA : no return to survey. National standards :
IRAM 3100 1967 White writing paper,
IRAM 3102 1982 Paper for typed copies,
IRAM 3025 1956 Blue-black ink (s.3.2),
IRAM 3026 1958 Blue ink for ordinary writing (s.3.2),
IRAM 3027 1982 Cotton typewriter ribbons (s.3.4.2.1),
IRAM 3037 1982 Nylon typewriter ribbons (s.3.4.2.2).
available from :

Instituto Argentino de Racionalizacion de Materiales,
Chile 1192,
Buenos Aires,
Republica Argentina.

4.5 AUSTRALIA : return to survey; no relevant standards.

4.6 AUSTRIA : return to survey. National standard :
ONORM 1031 1984 Paper for continuous forms.
available from:
Osterreichisches Normungsinstitut,
1021 Wien,
AUSTRIA.

4.7 BAHAMAS : negative return to survey.

4.8 BANGLADESH : no return to survey.National standards :
BDS 405 1964 Writing and printing papers,
BDS 409 1964 Stationery for correspondence,
BDS 845 1977 Newsprint,
BDS 86 1959 Dye-based coloured fountain pen inks (s.3.2),
BDS 85 1960 Blue-black fountain pen inks (s.3.2),
BDS 87 1960 Ink powders and tablets, blue-black and red (s.3.2),
BDS 88 1960 Blue-black fluid writing ink (s.3.2),
BDS 89 1960 Fluid ink for registration and for cheques and records (s.3.2),
BDS 90 1959 Ink,stamp pad (s.3.5.2),
BDS 146 1961 Ink, duplicating, all weather for rotary type machines,
BDS 236 1964 Ribbon, typewriter (s.3.4.3),
available from:
Bangladesh Standards Institution,
3 DIT (Extension) Avenue,
Motijheel,
Commercial Area,
Dacca 2,
Bangladesh.

4.9 BARBADOS : negative return to M.R. survey.

4.10 BELGIUM : negative return to M.R. survey.

4.11 BENIN : no return to survey; no standards found.

4.12 BERMUDA : negative return to survey.

4.13 BOTSWANA : no relevant information provided in reply to

M.R.survey; no relevant standards found.

4.14 BRAZIL :positive return to survey. Relevant standard : Instrucao Normativa no. 83 of April 1978, available from the national archives. (s.2.3.2).

4.15 BRUNEI : no returns to surveys; no standards found.

4.16 BULGARIA : no return to survey. National standards:
BDS 9259 1971 Lined paper for writing,
BDS 9258 1971 Correspondence paper,
BDS 6799 1972 Writing paper for offices,
BDS 6454 1972 Wood pulp paper for printing,
BDS 6985 1973 Paper for offset printing,
BDS 11255 1973 Thin paper for surface printing,
BDS 6381 1973 Cellulose paper for surface printing,
BDS 6803 1974 Paper for writing and printing : coloured,
BDS 475 1975 Bond paper,
BDS 9739 1977 Newsprint,
BDS 3935 1980 Copying paper,
BDS 12570 1981 Paper for reprographic copies,
BDS 6455 1982 Ground wood writing paper,
BDS 2199 1983 Cartridge paper,
BDS 8126 1974 Ball pen ink,
available from:
State Committee for Science and Technical Progress,
Standards Office,
21, 6th September Street,
1000 Sofia,
BULGARIA.

4.17 CANADA : positive return to survey. National standards :
CGSB-9-GP-33M 1979 Airmail paper,
CGSB-9-GP-36M 1979 Printing paper, Bristol,
CGSB-9-GP-37M 1979 Paper, Index Bristol,
CGSB-9-GP-39M 1979 Paper, manifold,
CGSB-9-GP-40M 1979 Paper, mimeograph, stencil, duplicating,
CGSB-9-GP-41M 1979 Paper, ledger (s.2.2.1),
CGSB-9-GP-44M 1979 Paper, duplicating, spirit process,
CGSB-9-GP-50M 1979 Paper, register bond,
CGSB-9-GP-28Ma 1982 Paper, no.1 & no.2 offset,
CGSB-9-GP-29Ma 1982 Paper, book, no.1 and no.1 opaque,
CGSB-9-GP-51M 1982 Paper, xerographic copier, dry toner,
CGSB-9-GP-1Ma 1982 Paper, bond,
CGSB-21-GP-1M 1977 Ink, printing, offset lithographic (s.3.6.2.1),
CGSB-21-GP-2M 1977 Ink, printing, letterpress (s.3.6.2.2.),
CGSB-21-GP-6M 1977 Ink, printing, offset duplicator, black

(s.3.6.2.3),
CGSB-53-GP-53M 1978 Ball point pen (s.3.3.3.1),
CGSB-53-GP-114M 1978 Marker, tube type, for use in writing (s.3.3.3.2),
CGSB-53-GP-116M 1978 Pen, porous nib (s.3.3.3.3),
CGSB-53-GP-6M 1977 Typewriter ribbon, cotton (s.3.4.4.1),
CGSB-53-GP-47M 1977 Typewriter ribbon, nylon (s.3.4.4.2),
CGSB-53-GP-81M 1977 Typewriter ribbon, nylon, offset (s.3.4.4.3),
CGSB-53-GP-7b 1971 Duplicating liquid, direct process, spirit,
CGSB-53-GP-12M 1978 Ink, stamp pad (s.3.5.3.1),
CGSB-53-GP-49M 1978 Ink, numbering machine (s.3.5.3.2),
available from:
Canadian Government Publishing Centre,
Supply and Services,
Ottawa,
Ontario,
Canada,
K1A S9.

4.18 CHAD negative return to survey.

4.19 CHILE return to survey; no relevant standards.

4.20 CHINA positive return to survey. National standards :
QB 28-73 Writing paper,
QB 30-73 Typewriter paper,
GB 1910-80 Newsprint,
GB 1911-80 Copying paper,
QB 551-81 Blue-black ink,
available from :
China Association for Standardisation,
P O Box 820,
Beijing,
China.

4.21 COLOMBIA no return to survey. National standards :
INCOTEC 1539 1980 Paper for litho printing,
INCOTEC 1673 1981 Paper for printing and writing,
available from :
Instituto Colombiano de Normas Técnicas,
Carrera 37 no.52-95,
P.O.Box 14237,
Bogota,
Colombia.

4.22 CONGO no return to survey, no standards found.

4.23 COSTA RICA negative return to survey.

4.24 CUBA no return to survey, no relevant standards found.

4.25 CYPRUS return to survey; no relevant standards.

4.26 CZECHOSLOVAKIA positive return to survey. National standards:

ON 50 2185 1970 Bible paper,
ON 50 2171 1971 Paper for continuous forms,
ON 50 2295 1972 Manifold paper,
CSN 50 2844 1974 Airmail paper,
CSN 50 2417 1975 Finished paper,
CSN 50 2851 1978 Paper for records,
CSN 50 2121 1978 Printing papers, general provisions,
CSN 88 6101 1979 Letter paper for economic and official correspondence,
CSN 66 6663 1979 Reprographic materials, electrographic papers, technical requirements,
CSN 50 2124 1979 Rotogravure paper,
CSN 50 2123 1980 Offset paper,
CSN 50 2251 1980 Writing paper,
CSN 50 2101 1981 Newsprint,
ON 50 2295 1982 Letter-copying paper,
CSN 90 4140 1953 Blue-black fountain pen ink,
CSN 90 4150 1954 Documentary ink,
CSN 88 0125 1963 Printing inks,
ON 90 4191 1965 Writing pastes for ballpoint pen fillers,
ON 17 8180 1979 Inked fabric ribbon for typewriters,
CSN 90 4145 1981 Inks,
available from :
Urad pro normalizaci a mereni,
Václavske náměsti 19,
113 47 Praha 1,
Czechoslovakia.

4.27 DENMARK positive return to surveys. National standards :

DS 2058 1969 Inks for permanent writing (s.3.2),
DS 2056 1969 Fastness to light of writing materials. Requirements and rules for testing,
available from :
Dansk Standardiseringsraad,
Aurehøjvej 12,
Postbox 77,
DK 2900 Hellerup,
Denmark.

Denmark : General Instructions for Supply of Printed Matter,1983, (s.2.2.2), issued by the State Purchasing Office. Available from the National Archives.

4.28 DOMINICAN REPUBLIC no return to survey, no standards found.

4.29 ECUADOR no return to survey, no standards found.

4.30 EL SALVADOR no return to survey, no standards found.

4.31 ETHIOPIA no return to survey, no standards found.

4.32 FIJI no return to survey, no standards found.

4.33 FINLAND positive return to survey. National standards :
SFS 4465 1980 Paper and board. Uncoated papers and boards for archival storage.A modified version of this was issued as state administrative standard VHS 1009 and was made compulsory for state and municipal authorities under rules issued by the national archives (Y1/83) under the authority of the archive law (184/81) (s.2.2.3).
The national standard is available from :
Suomen Standardisoimisliitto,
P.O.Box 205,
SF 00121 HELSINKI,
Finland.
The state administrative standard is availabe from
Technical Research Centre,
Graphics Arts Laboratory,
Tekniikantie 3,
SF-02150 ESPOO,
Finland.

4.34 FRANCE positive return to survey. National standards :
NF Q 00-001 1973 General information concerning papers and cardboards (s.2.3.5.1),
NF Q 01-002 1973 List of papers and cardboards classified according to use (s.2.3.5.2),
NF Q 11-001 1975 Characteristics of typewriting papers,
NF Q 11-006 1975 Characteristics of paper for memoranda books,
NF Q 11-002 1976 Characteristics of papers for ink duplicators,
NF Q 11-005 1976 Characteristics of paper for record books,
NF Q 01-007 1977 Paper and board : nomenclature for the names relating to fibre composition (s.2.3.5.3),

NF Q 11-007 1977 Characteristics of paper for index cards,
NF Z 10-001 1982 Paper for printed forms and other office supplies for use by government services, public services and similar bodies (requirements in respect of use, quality and dimensions) (s.2.3.5.5),
available from :
Association française de normalisation,
Tour Europe,
Cedex 7,
92080 Paris la défense,
France.

4.35 GABON no return to survey, no standards found.

4.36 GAMBIA no return to survey, no standards found.

4.37 GERMAN DEMOCRATIC REPUBLIC positive return to survey.
National standards :
TGL 33067-01-03 1977 Coloured printing inks, for multicolour printing.Letterpress and offset printing inks (s.3.6.4),
TGL 13560-01-04 1980 Black inks for letterpress and offset printing (s.3.6.4),
TGL 28519-01-03 1980 Coloured and white printing inks for sheet fed printing presses. Offset printing inks (s.3.6.4),
TGL 3044/01-02 Paper for writing and typewriting (s.2.3.6),
TGL 3063/01 Paper for printing by offset litho, size and formats,
TGL 3063/02 Paper for printing by offset litho, technical requirements,
TGL 12254/02 Paper for printing forms, technical requirements,
TGL 24357/02 Thick paper for book printing, technical requirements,
TGL 24553/02 Thin printing paper, technical requirements,
TGL 24554/01 Machine coated offset printing paper,
TGL 28996 Machine coated illustration printing paper,
TGL 37886/02 Illustration printing paper,
available from :
Staatsverlag der DDR,
1080 Berlin,
German Democratic Republic.

4.38 GERMAN FEDERAL REPUBLIC
Return to survey referring questionnaire to national standards authority.National standards :
DIN 6734 1965 Duplicating paper for stencil duplicators : types of material and characteristics,
DIN 827 1975 Paper, classes of fibre materials,

DIN 19306 1977 Letterpress paper, offset paper, rotagravure paper, technical conditions of delivery,
DIN 19307 1978 Paper and board for office purposes : requirements and test methods,
DIN 16554 1982 Ball point pen refills (s.3.3.5),
available from :
Deutsches Institut für Normung,
Burggrafenstrasse 4-10,
Postfach 1107,
D-1000,
Berlin,
German Federal Republic.

4.39 GREECE no return to survey, no standards found.

4.40 GUYANA no return to survey, no standards found.

4.41 HAITI no return to survey, no standards found.

4.42 HONG KONG negative return to survey.

4.43 HUNGARY positive return to survey. National standards :
MSZ 8116 1976 Gravure printing paper,
MSZ 6758 1957 Ink for rubber stamps,
MSZ 20504 1961 Blue ink for fountain pens (s.3.2.1),
MSZ 8013 1978 Technical requirements for newsprint,
available from :
Magyar Szabvanyügyi Hivatal,
1450 Budapest 9,
Hungary.

4.44 INDIA positive return to survey. National standards :
IS 1774 1961 Paper for permanent records (s.2.2.4),
IS 1848 1981 Writing and printing papers,
IS 221 1962-1977 Ink fluid, blue-black, for permanent records (s.3.2),
IS 222 1962-1977 Ink fluid for general purposes (s.3.2),
IS 5805 1970 Specification for ball point pen ink (s.3.3.6),
IS 1221 1971-1979 Dye based fountain pen inks (s.3.2),
IS 220 1972-1975 Ferro-gallo-tannate fountain pen ink (0.1% iron content) (s.3.2),
IS 6830 1973-1975 Offset ink, black, general purpose (s.3.6.5.1),
IS 1222 1973 Ink, duplicating, for twin cylinder rotary machines,
IS 393 1975-1976 Ink, stamp pad (s.3.5.5),
IS 7771 1975-1976 Letterpress half tone ink, black (s.3.6.5.2),

IS 5046 1975 Letterpress ink, black, bookprinting (s.3.6.5.3),
IS 1333 1973-1978 Ink, duplicating for single drum rotary machine,
IS 1581 1975 Ferro-gallo-tannate fountain pen ink (0.2% iron content) (s.3.2),
IS 2105 1975 Letterpress ink, black, general purpose (s.3.6.5.4),
IS 219 1975 Ink powder and tablets (s.3.2),
IS 8642 1977 Dyes for water based writing inks (s.3.2),
IS 8744 1978 Rotary letterpress newsprint ink, black, (s.3.6.5.5),
available from :
Indian Standards Institution,
Manak Bhavan,
9 Bahadur Shah Zafar Marg,
New Delhi 110002,
India.

4.45 INDONESIA no return to survey, no standards found.

4.46 IRAN no return to survey. National standards :
ISIRI 501 1971 Classification and definition of characteristics and tolerances of paper and board,
ISIRI 309 1966 Fountain pen ink, dye base,
available from :
Institute of Standards and Industrial Research of Iran,
Ministry of Industries,
PO Box 11365-7594,
Tehran,
Iran.

4.47 IRAQ no return to survey. National standard :
IOS 808 1978 Blue-black writing inks,
available from :
Central Organisation for Standardisation and Quality Control,
Planning Board,
P O Box 13032,
Aljadiria,
Baghdad,
Iraq.

4.48 IRELAND no return to survey. National standard :
IS 76 1956 News ink for rotary presses (s.3.6.6),
available from :

Institute for Industrial Research and Standards,
Ballymun Road,
Dublin 9,

4.49 ISRAEL positive return to survey. National standards :
SI 696 1968 Printing paper : general requirements,
SI 715 1968 Paper for printing by relief or letterpress,
SI 716 1968 Paper for printing by offset process,
SI 684 1975 Newsprint paper,
SI 667 1984 Writing paper,
SI 151 1955 Writing ink on iron base (s.3.2),
SI 248 1957 Writing ink on organic bases (s.3.2),
available from :
Standards Institution of Israel,
42 University Street,
Tel Aviv 69977,
Israel.

4.50 ITALY no return to survey, no standards found.

4.51 IVORY COAST no return to survey, no standards found.

4.52 JAMAICA no information provided in return to M.R. survey, no standards found.

4.53 JAPAN positive return to survey. National standards :
JIS P 3101-3104 1958 Printing papers,
JIS P 3201-3203 1958 Writing papers,
JIS P 3001 1976 Newsprint,
JIS S 5509 1976 Report papers,
JIS P 4502 1978 Paper for business forms,
JIS K 5704 1957 Mimeograph ink,
JIS K 5703 1958 Press ink,
available from :
Japanese Industrial Standards Committee,
Standards Department,
Agency of Industrial Science and Technology,
Ministry of International Trade and Industry,
1-3-1 Kasumigaseki,
Chiyoda-ku,
Tokyo 100,
Japan.

4.54 JORDAN no return to survey. National standards :
JSS 81 1978 Offset paper,
JSS 82 1978 Letterpress paper,
JSS 51 1978 Writing papers,
available from :

Directorate of Standards,
Ministry of Industry and Trade,
P O Box 2019,
Amman,
Jordan.

4.55 KENYA no return to survey, no standards found.

4.56 KOREA no return to survey. National standards :
KS M 7101 1974 Newsprint,
KS M 7102 1974 Printing paper,
KS M 7100 1975 Writing paper,
KS G 2301 1972 Writing inks,
KS M 5953 1976 Duplicating ink, black,
KS M 5954 1976 Printing ink for newspapers, black,
available from :
Bureau of Standards,
Industrial Advancement Administration,
2, Chung-ang-dong,
Kwach on myon,
Republic of Korea.

4.57 KUWAIT no return to survey, no standards found.

4.58 LEBANON negative return to survey.

4.59 LIBERIA no return to survey, no standards found.

4.60 LIBYA no return to survey, no standards found.

4.61 LUXEMBOURG no return to survey, no standards found.

4.62 MACAU no return to survey, no standards found.

4.63 MALAWI no relevant information provided in return to M.R. survey. No standards found.

4.64 MALAYSIA positive return to survey. National standards :
MS 285 1975 Paper (duplicating, copy, liquid process),
MS 332 1976 Typewriting paper,
MS 855 1983 Newsprint,
MS 403 1976 Ink paste black (stencil duplicating machine),
MS 792 1982 Typewriter ribbon, nylon (s.3.4.5.1),
MS 793 1982 Typewriter ribbon, cotton (s.3.4.5.2),
available from :
Standards and Industrial Research Institute of Malaysia,
Lot 10810, Phase 3,
Federal Highway,

P.O.Box 35,
Shah Alam,
Malaysia.

4.65 MALTA no return to survey, no standards found.

4.66 MAURITIUS negative return to survey.

4.67 MEXICO no return to survey. National standard :
R 11 1950 Blue-black writing ink (s.3.2),
available from :
Direccion General de Normas,
Calle Puente de Tecamachalo,
Seccion Fuentes,
Naucalpan de Juarez,
53950,
Mexico.

4.68 MOROCCO no return to survey. National standards :
NM 20.02-C-006 1975 Paper for typewriters,
NM 20.02-C-007 1975 Letter paper,
NM 20.02-C-008 1975 Paper for duplicators,
available from :
Service de normalisation industrielle Marocaine,
Direction de l'industrie,
Ministere du Commerce et de l'industrie,
5, rue Arrich,
Rabat,
Morocco.

4.69 MOZAMBIQUE no return to survey, no standards found.

4.70 NEPAL no return to survey, no standards found.

4.71 NETHERLANDS negative return to survey.

4.72 NETHERLANDS ANTILLES negative return to M.R. survey.

4.73 NEW ZEALAND no return to survey. National standards :
NZ SS 515 1948 Stamp pad ink (s.3.5.6),
NZ SS 514 1948 Writing, fountain pen and record inks and ink powders (s.3.2),
available from :
Standards Association of New Zealand,
Private Bag,
Wellington,
New Zealand.

4.74 NIGER no return to survey, no standards found.

4.75 NIGERIA no return to survey. National standard :
NIS 39 1974 Ball point pen ink (s.3.3.7),
available from :
Standards Organisation of Nigeria,
Federal Ministry of Commerce and Industry,
4 Club Road,
P.M.B. 01323,
Enugu,
Nigeria.

4.76 NORWAY positive return to survey. National standard :
NS 4136 1982 Paper and board for office use,
available from :
Norges Standardiseringsforbund,
Postboks 7020,
Homansbyen,
N-0306,
Oslo 3,
Norway.

4.77 OMAN no return to survey, no standards found.

4.78 PAKISTAN no return to survey.National standards :
PS 409 1964 Stationery for correspondence,
PS 776 1970 Paper for permanent records (s.2.2.5),
PS 1355 1975 Newsprint,
PS 405 1981 Specification for writing and printing papers,
PS 86 1959 Dye based coloured fountain pen inks (s.3.2),
PS 85 1960 Fountain pen ink, blue-black (s.3.2),
PS 87 1960 Ink powders and tablets, blue, black and red (s.3.2),
PS 88 1960 Blue-black fluid writing ink (s.3.2),
PS 89 1960 Fluid ink for registration and for cheques and records (s.3.2),
PS 90 1960 Stamp pad ink (s.3.5.7),
PS 146 1961 Duplicating ink, all weather, black for rotary type machines,
PS 236 1964 Typewriter ribbon (s.3.4.6),
PS 1434 1979 Letterpress ink, black, general purpose (s.3.6.8),
available from :
Pakistan Standards Institution,
39 Garden Road,
Saddar,
Karachi 3,
Pakistan.

4.79 PANAMA no return to survey, no standards found.

4.80 PAPUA AND NEW GUINEA negative return.

4.81 PERU no return to survey, no standards found.

4.82 PHILIPPINES questionnaire referred to national standards authority. No relevant standards found.

4.83 POLAND positive return to survey. National standards :
P 95007 1959 Offset paper and paperboard,
BN 65,7321-04 1965 Letterpress printing paper,
PN P 50007 1976 Paper products, names, definitions and classification,
PN P 50402 1979 Newsprint,
BN 8547-02 1975 Ink for duplicators,
BN 69,7322-01 1970 Typewriter paper,
BN 68,7323-02 1968 Writing paper,
BN 64,8541-09 1965 Ink for rubber stamps,
BN 71,8541-16 1969 Writing ink,
available from :
Centralny Osrodek Informacji, Normalizacyjnej
i Metrologicznej,
Pl. Dzierzynskiego 1,
00-139 Warszawa,
Poland.

4.84 PORTUGAL negative return to M.R. survey, no relevant standards found.

4.85 PUERTO RICO no return to survey, no standards found.

4.86 QATAR negative return to M.R. survey, no standards found.

4.87 ROMANIA enquiry referred from national archives to Romanian Institute of Standardization. National standards :
STAS 2662 1971 Printing paper : offset printing paper,
STAS 10 831 1976 Paper for xerographic copies,
STAS 106 1978 Finished products of paper industry : rules for quality control,
STAS 400 1980 Writing paper,
STAS 494 1980 Letterpress printing paper : edition paper,
STAS 7283 1980 Offset printing paper : rotaprint paper,
STAS 7403 1980 Letterpress printing paper : bible paper,
STAS 260 Relief printing paper : newsprint paper,

STAS 6696 1974 Printing inks : range of standard inks for

letter press printing,
STAS 5898 1979 Fountain pen ink : general requirements for quality,
available from :
Romanian Institute of Standardization,
Ruellie Pintilie 5,
Bucarest 1,
Romania.

4.88 RWANDA no return to survey, no standards found.

4.89 SAUDI ARABIA no return to survey, no standards found.

4.90 SENEGAL negative return to M.R. survey, no standards found.

4.91 SEYCHELLES no return to survey, no standards found.

4.92 SIERRA LEONE negative return to survey.

4.93 SINGAPORE negative return to M.R. survey.National standard:
SS 107 1974 Duplicating ink for twin cylinder rotary machines.
available from :
Singapore Institute of Standards and Industrial Research,
Maxwell Road,
PO Box 2611,
Singapore 9046.

4.94 SOLOMON ISLANDS no return to survey, no standards found.

4.95 SPAIN no return to survey. National standard :
UNE 57-077 1974 Paper for offset printing,
available from :
Instituto Espanol de Normalizacion,
Calle Fernandez de la Hoz, 52,
28010 Madrid,
SPAIN.

4.96 SRI LANKA positive return to survey. National standards :
CS 33 1961 Permanent blue-black writing inks (s.3.2),
CS 57 1969 Permanent blue-black ink for fountain pens (s.3.2),
CS 58 1969 Permanent blue-black writing ink for dip pens (s.3.2),
CS 59 1969 Washable ink for fountain pens (s.3.2),
CS 60 1969 Record ink (s.3.2),
CS 169 1972 Stencil duplicating ink,
SLS 341 1983 Black letterpress ink (s.3.6.10),

available from :
Sri Lanka Standards Institution,
53 Dharmapala Mawatha,
PO Box 17,
Colombo 3,
Sri Lanka.

4.97 SUDAN negative return to M.R. survey, no standards found.

4.98 SWAZILAND negative return to survey, no standards found.

4.99 SWEDEN positive return to survey. The relevant standards are included in the Ordinance (1964 : 504) concerning the use of writing material for state business (s.2.2.6 and 3.1). An annual list of materials approved for archival use is issued by the Swedish Authority for Testing, Inspection and Metrology (Statens provnings-anstalt). These are available from :
Riksarkivet,
Box 12541,
102 29 Stockholm,
Sweden.

4.100 SWITZERLAND no return to survey, no standards found.

4.101 TANZANIA no return to survey, no standards found.

4.102 THAILAND no return to survey. National standard :
TIS 287 Standard for printing and writing papers,
available from :
Thai Industrial Standards Institution,
Ministry of Industry,
Rama VI Street,
Bangkok 10400,
Thailand.

4.103 TOGO no return to survey, no standards found.

4.104 TRINIDAD AND TOBAGO no return to survey, no standards found.

4.105 TUNISIA no return to survey, no standards found.

4.106 UNION OF SOVIET SOCIALIST REPUBLICS positive return to survey. National standards :
GOST 5.760 1971 Duplicator paper : quality requirement for certified products,
GOST 18510 1973 Writing paper,
GOST 6445 1974 Newsprint,

GOST 6657 1977 Writing paper : technical requirements,
GOST 7317 1978 Printing paper : technical specifications,
GOST 9094 1983 Offset printing paper : specifications,
GOST 9095 1983 Printing paper : specifications,
GOST 18339 1973 Inks,
GOST 24226 1980 Ball pen inks : specifications,
available from :
USSR State Committee for Standards,
Leninsky Prospekt 9,
Moskva 117049,
USSR.

4.107 UNITED ARAB EMIRATES no return to survey, no standards found.

4.108 UNITED KINGDOM no questionnaire issued.National standards :
BS 3020 1959 Improved inks for letterpress four colour printing (s.3.6.11.1),
BS 3484 1962 Blue-black record inks (s.3.2),
BS 3657 1963 Blue-black writing inks (s.3.2),
BS 4160 1967-1980 Inks for letterpress three or four colour printing (s.3.6.11.2),
BS 4666 1971-1981 Inks for offset three or four colour printing (s.3.6.11.3),
available from :
British Standards Institution,
Linford Wood,
Milton Keynes,
MQ14 6LE,
United Kingdom.

4.109 UNITED STATES OF AMERICA positive return to survey. Standards :
American Society for Testing and Materials :
D 3290-81 Bond and ledger paper for permanent records (s.2.2.7),
D 3458-75 Copies from office copying machines for permanent records (s.2.2.7 and 3.8),
D 3301-74 File folders for storage of permanent records,
D 3208-81 Manifold papers for permanent records (s.2.2.7),
available from :
American Society for Testing and Materials,
1916 Race Street,
Philadelphia PA 19103,
U.S.A.

American national standards :
ANSI Z39.48-1984 Permanence of paper for printed library

materials (s.2.2.7),
available from :
American National Standards Institute,
1430 Broadway,
New York 10018,
U.S.A.

Council on Library Resources, Committee on Production Guidelines for Book Longevity. Interim report published in Restaurator, 4, pp.239-247 (s.2.2.7).
Other material available from Council on Library Resources,
1785 Massachusetts Ave,NW,
Suite 313,
Washington DC 20036,
U.S.A.

Library of Congress : information about their paper manuscript marking ink is given in Preservation Leaflet 4 : Marking Manuscripts (s.3.5.9),
available from :
Chief, Preservation Office,
Research Services,
Library of Congress,
Washington,
D.C. 20540,
U.S.A.

4.110 VENEZUELA no return to survey, no standards found.

4.111 YUGOSLAVIA no return to survey, no standards found.

4.112 ZAIRE no return to survey, no standards found.

4.113 ZAMBIA negative return to survey.

4.114 ZIMBABWE positive return to survey. There appear to be no formal standards, but information is available from :
Department of Printing and Stationery,
P.O.Box 8062,
Causeway,
Zimbabwe

5. CONCLUSION

5.1 The first conclusion must be that, in general, archives and archival institutions are not, in themselves, major producers of standards. Apart from Denmark, (where the national archives in conjunction with the state purchasing office issued guidelines for the use of paper by state institutions) and Finland (where the national archives is responsible for implementing a state administrative standard) the standards listed here are all either issued by governments, or, in the majority of cases, by national standards institutions. It does appear, however, that archivists were members of many of the committees which drafted them.

5.2 The only other possible source of standards which has not been explored in this report and which might be interesting to pursue at a later date is government printing offices and purchasing departments, some of which do appear to have their own standards.

5.3 Standards for paper

There has been considerable research, over many years, into the reasons for the decay of paper and this research has been reflected in the publication of a number of standards for permanent paper (section 2.2). Archivists wishing to purchase or recommend a permanent paper have a number of possible standards which they could specify.

5.4 It would probably be of considerable benefit if an international standard for permanent paper could be issued. It is suggested that the American National Standard - Permanent Paper for Printed Library Materials (Z39.48-1984) would form a suitable basis for such a standard as it contains elements which are common to most other standards, is very up-to-date and is relatively simple (section 2.1.4).

5.5 Standards for ink

There has been a great deal of research over a very long period into techniques for producing permanent inks for use in fountain pens and dip pens; monks in the tenth century and even earlier were capable of making such a material. As a result, there are many national standards for these products, all of which are very similar and any one of which could be used by archivists as a source of information or as a basis for ordering inks (section 3.2).

5.6

It appears that there has been little research into the fading or long term performance of inks for ball point pens, marking pens

or similar products. There are a number of standards for these products, some of which specify lightfastness and resistance to certain chemicals. In the absence of the detailed published research and long term experience of use which applies to fountain pen inks, it is not possible to provide a critical assessment of these standards (section 3.3). There is clearly a need for further research into the permanence of modern writing materials in order to provide accurate guidelines for archivists.

5.7 Standards for typewriter ribbons

There are only a few standards for these and they are for fabric, rather than film ribbons; they do, however, include specifications for lightfastness. In view of the rapid rate at which the technology of typewriters and computer printers is changing, it is probably not an appropriate time to attempt to set standards for these products.

5.8 Standards for stamp pad inks

There are a number of standards for these. The most interesting one is not a formal national standard, but a product specification issued by the Library of Congress for its own in-house ink. This specification covers all the requirements for a secure, safe and permanent stamp pad ink and would be a good model against which to test the products of other manufacturers (section 3.5.9).

5.9 Standards for printing inks

Experience has shown that printing ink is normally long lasting and that the major threat to books is the quality of the paper and binding materials, not the quality of the ink. The standards are primarily concerned with the performance of the ink and its suitability for its intended application, although some standards do specify lightfastness, resistance to water and solvents.

5.10 Standards for inks for duplicators

These standards are not archival and the process does not appear to be capable of creating permanent records (section 3.7).

5.11 Standards for photocopier images

Only one such standard has been identified and it appears to be inapplicable to modern photocopier systems (section 3.8). Because of the enormous popularity of these machines and the large number of photocopies which are being transferred to archives, more research is needed in this area and appropriate standards should be issued .

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